

## **Environmental Management Programs Final Report (Fiscal Year 2002)**

Based on the ISO 14001 requirement for managing significant impacts through environmental management programs (EMPs) the City of San Diego's Environmental Services Department, Refuse Disposal Division (RDD) developed and implemented twelve EMPs to manage our most significant impacts as well as ensure 100% participation throughout the division. This report summarizes the results of the EMPs meeting RDD's objectives and targets for the fiscal year 2002 (July 2001-June 2002).

### **Objectives and Targets:**

Four key objectives with twelve target areas were identified for EMP development and implementation in 2001. These included:

#### Exhaust Emissions Reductions

- a) Target – Heavy Motive Equipment: 10% fuel use reduction.
- b) Target - Stationary Equipment: Review and amend where necessary operating procedures and maintenance activities to obtain optimum fuel efficiency. Investigate alternative fuel/new system technology for application within the Greens area.
- c) Target - Support Vehicles: 10% fuel use reduction in Landfill Gas Management and Groundwater Monitoring programs.

#### Water Use Reduction – Potable/Reclaimed

- a) Target - 25% Potable water use reduction in disposal/dirt operations.
- b) Target - Complete mulch/compost reclaimed water pilot project.
- c) Target - Conduct Native Plant Nursery water use baseline study.

#### Energy/Resource Conservation Effort

- a) Target - 10% paper use reduction throughout division.
- b) Target - Implement groundwater sampling micro-purge program at Arizona Street landfill.
- c) Target - Complete landfill gas to energy feasibility study for Arizona Street landfill.

#### Positive Impact – Continuous Improvement

- a) Target - Expand N.P.D.E.S. Best Management Practices (BMPs) program to include routine pump down of desilting pond, additional mulch and straw wattle application and installation of extra silt fencing.
- b) Target - Expand Native Habitat Impact Awareness Program to all relevant city departments.
- c) Target - Complete Ticket-less Transaction for Commercial Haulers Pilot Project and implement program with Waste Management of California. Implement program with as many other commercial haulers as possible.

The Environmental Management Programs results were mixed (as expected) due to operational, seasonal, and organizational influences beyond the control of the section managers and their staffs. However, we did achieve significant environmental and

economic savings suggesting that our objects and targets were reasonable and achievable. The remainder of this report describes the results of our EMP programs for meeting our EMS objectives and targets for 2001.

### **Exhaust Emissions Reduction:**

Motive Equipment: 10% fuel use reduction: Fuel use as an environmental performance indicator (EPI) proved unrealistic due to increased consumption rates when the engines are under load (working) and other variables including atmospheric conditions and variable operational requirements. A better EPI was engine hours (load vs. idle time).

To address this target, Standard Operating Procedures (SOPs) were developed and implemented to shut off the equipment during breaks and lunch periods, periodically blow out the radiators, and for daily heavy equipment preventive maintenance. This EMP eliminated over 10,000 idle time hours with a projected cost savings of over \$700,000.00. Emissions reduction calculations were not completed at this time due to the lack of manufacturer emissions data. Future EMPs in this area will attempt to include this data as it becomes available.

Stationary Equipment: Greens area staff investigated the use of bio-diesel for the wood tubgrinder. An APCD rule issued regarding the San Diego Air District being a NOx non-attainment area precluded further bio-diesel consideration as the use of bio-diesel increases NOx emissions. It is important to note however that all other regulated emission by-products are reduced. Therefore future EMPs in this area will continue to monitor the APCD's position in regards to the use of this fuel source within our district.

Landfill staff also visited BKM Inc. who designed a mock-up particulate trap for the tub-grinders. The \$65,000.00 cost per unit prohibited further consideration of this technology at this time. New engines and fuel additives may be a more economically reasonable (lifetime cost) solution. In addition SOPs have been formalized for equipment start-up and shut-down, radiator blow-out, wood grinding operations, green material grinding ops, and windrow building ops.

Support Vehicles, 10% fuel use reduction in Landfill Gas Management and Groundwater Monitoring programs: The LFG Management Field Staff has been relocated to the Miramar landfill eliminating transit times and fuel consumption. The staff has also downsized from 5 to 2 field personnel, and one other major site (Chollas) has been privatized eliminating the need for city staff LFG maintenance of the collection system. Note: Fuel use proved to be an unrealistic Environmental Performance Indicator (EPI) due to the above changes in the program. An awareness program has been implemented including placement of stickers within all vehicles to remind staff to; avoid jackrabbit starts, walk between nearby gas wells, carry minimum payloads (empty the back of the trucks of excess equipment), and maintain proper tire pressure.

### **Water Use Reduction:**

25% Potable water use reduction in disposal/dirt operations: Training was conducted for landfill staff by the Metropolitan Wastewater Department and the San Diego County – Department of Environmental Health on the treatment and proper uses of reclaimed/recycled water. This training in conjunction with the posting of reclaimed water test results provided the necessary information to the landfill staff to allow them to eliminate the use of potable water for all dust control activity. In addition, the reclaimed water system was analyzed and it was determined that the water meter could be downsized from six to four inches without incurring an impact to the dust control operations. The implementation of this EMP resulted in a 100% elimination of potable water use for dust control operations. The water tank has been drained and will only be used as a back-up during emergency conditions or reclaimed water loss. Also, a 46% annual water cost savings (approx \$30,000), water meter charge savings in excess of \$6,000 per year, and approximately 31 million gallons of potable water savings have been realized.

Complete mulch/compost reclaimed water pilot project: Compost was selected as the test case medium due to the stringent requirements and testing it goes through prior to being marketed to the public. An increase in salinity was the concern when introducing reclaimed water into the composting process. Therefore a compost test cell was constructed using reclaimed water in lieu of potable water for processing the compost. The completed compost product was sampled by a contracted test lab and the results indicated a better compost product, including a reduction in the salinity, than compost processed with potable water. A second test cell was constructed to ensure the composting results were repeatable. As a result of this EMP the Greens Area also eliminated 100% of its potable water use for processing mulch and compost.

Native Plant Nursery water use baseline study: This is an on-going two year project designed to monitor the water use within the native plant nursery. Metered systems allow for a more detailed analysis of the water requirements for the native plant species, thereby increasing the potential for greater growth rates and survivability. The knowledge of water requirements for native plant species contributes to the water conservation efforts within the nursery.

### **Energy/Resource Conservation Effort:**

10% paper use reduction throughout division: Although not a significant aspect, this EMP allowed the Administration section to participate in the EMS process and successfully implement the intent of the EMS program within their area of influence. As a result a double-sided copy use program was instituted throughout the division resulting in a 17% reduction in paper.

### Groundwater sampling micro-purge program at Arizona Street landfill:

Implementation of the micro purge sampling program was successfully completed in 2001. As a result approximately 94% of the purge water generated at the Arizona Street landfill has been eliminated. This equates to 990 gallons of purge water waste reductions at an annual disposal cost savings of \$700.00. This program is being exported to the Miramar and Chollas landfill sites where appropriate.

Landfill Gas (LFG) to energy feasibility study for Arizona Street landfill: The feasibility study indicated a significant source of LFG available to support an energy project at this site. Suggested uses include supplying power to heat the swimming pool and light the tennis courts at Morley Field Recreation Center, provide excess gas to the Navy for the Balboa Naval Hospital, and potentially supplying power to Balboa Park. These alternatives are currently being studied within the Energy Conservation and Management Division and therefore will no longer be tracked as an EMP.

**Positive Impact (Continuous Improvement)**

Expand N.P.D.E.S. Best Management Practices (BMPs) program: No Notices of Violations or fines were issued this season. Lack of rainfall kept the sedimentation basin from ever reaching capacity. However, implementation of target goals including installing the water pump, piping, and J stand for the desilting basin and pump-down of the basin provided increased retention capacity thereby reducing the risk of permit violations. Other measures implemented this year included application of 82,618 cubic yards of mulch and 1,500 gallons of tackifier to the slopes, installation of 700 feet of silt fence, 231 feet of silt dike, and 1000 feet of straw wattles. Three additional down drains and one sediment basin were also installed as well.

Expand Native Habitat Impact Awareness Program to all relevant city departments: Lack of rain prevented the filling of vernal pools this season thereby effectively canceling all training programs for this year. An additional staff person is being added to the Biological Section to increase the field staffing level to allow expansion of the native plant awareness and restoration programs. This will allow a greater number of City-wide restoration support projects (up to 20) to be managed concurrently throughout the year.

Ticket-less Transaction for Commercial Haulers Pilot Project: City and Waste Management Inc. packers are on line. Allied Inc. has been contacted regarding this system but at this time they are not interested in participating. Initial bar code guns and hardware could not reach the bar codes on the trucks from the fee booth. After considerable attempts at resolution there does not seem to be a bar code systems that is feasible for this operation. Therefore this portion of the program will be eliminated. The system will operate by preprogramming the packer data to meet this requirement. Baseline data was derived from a transaction time survey conducted in year 2000. City and Waste Management packers average 279 transactions per day combined. This process saves approximately 46 seconds per transaction, which equates to 3.5 hours per day times 361 days totaling 1,263.5 hours saved annually. Based on Caterpillar diesel truck engines (3306, 3176, 3406) 1,263.5 hours at idle equates to 9 tons of CO<sub>2</sub> and 0.1 tons of NO<sub>x</sub> reductions at the Fee Booth. The Fee Booth staff will continue to look at ways to expedite the fee transaction process including expansion and upgrades to the fee booth facility.